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09/938,337	08/23/2001	Shijun Sun	8371-141	1312

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Stephen S. Ford
MARGER JOHNSON & McCOLLOM, P.C.
1030 S.W. Morrison Street
Portland, OR 97205

EXAMINER	
LEE, RICHARD J	
ART UNIT	**PAPER NUMBER**
2613	5

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/938,337	SUN ET AL.
	Examiner	Art Unit
	Richard Lee	2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-23* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2,3,4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Claims 8, 9, and 16-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For examples:

(1) claim 8, lines 2-4, the phrase "**encoding and decoding** some of the macroblocks in the current image frame **using global motion vector coding** where the global motion parameters are used to generate local motion vectors for the macroblocks" as claimed is vague and indefinite in that it is unclear how the global motion vector coding, as understood to be provided within the encoder, is performed in the decoding mode as claimed;

(2) claim 8, lines 5-6, the phrase "**encoding and decoding** other macroblocks in the current image frame using another coding scheme" as claimed is vague and indefinite in that it is unclear how the **another coding scheme**, as understood to be provided within the encoder, is performed in the decoding mode as claimed;

(3) claim 9, lines 2-3, "the same macroblocks" shows no clear antecedent basis;

(4) claim 16, lines 3-5, the phrase "identifying macroblocks in the image frame that have local motion estimation parameters derived during **decoding** from the global motion estimation parameters" as claimed is vague and indefinite in that it is unclear how local motion estimation parameters are derived during decoding from the global motion estimation parameters within an encoder as claimed; and

(5) claim 23, line 2, "the subblocks" shows no clear antecedent basis.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 5-9, 16-18, 20, 21, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki (6,256,343).

Due to the indefiniteness of the claims as pointed out in the above paragraph (1), the Examiner wants to point out that the claims are being read in the broadest sense.

Suzuki discloses a method and apparatus for image coding as shown in Figures 1, 2, and 4-6, and the same method for coding or decoding an image, and encoder as claimed in claims 1, 2, 5-9, 16-18, 20, 21, and 23, comprising the same providing global motion parameters (i.e., 30-1, 30-2 of Figure 6) associated with a current image frame; deriving local motion vectors (i.e., 30-3 of Figure 6, and see column 10, lines 32-39) from the global motion parameters for individual macroblocks in the current image frame; using the local motion vectors to identify reference blocks in a reference frame (see column 3, lines 21-28, column 10, lines 32-39); using the identified reference blocks to encode or decode the macroblocks in the current image frame (see column 1, line 50 to column 2, line 37, column 3, lines 21-28, column 10, lines 32-39); identifying four global motion vectors associated with corners of the current image frame (see column 1, line 50 to column 2, line 12, column 9, lines 50-63, column 10, lines 14-39, Figures 5 and 6); generating the local motion vectors by interpolating the four global motion vectors to locations of the macroblocks in the current image frame (i.e., the four global motion vectors are

interpolated in the local motion estimation device 30-3 since the local motion estimation device performs local motion estimation in the INTER mode between the global motion compensated picture (i.e., as provided by global motion vectors) and the input picture s1, thereby producing local motion vectors, see column 10, lines 32-39); using the derived local motion vectors to identify reference blocks in the reference frame that are substantially the same as the macroblocks in the current image frame (see column 3, lines 21-28, column 10, lines 14-39); encoding the macroblocks as copy type macroblocks that are decoded by copying the identified reference blocks into macroblocks (i.e., in the INTRA frame coding mode, identified reference blocks are copied into the macroblocks, see 3-1, 3-2, 3-3 of Figure 4, see column 5, lines 13-55); identifying residuals between the reference blocks and the macroblocks, and encoding only the residuals for the macroblocks (i.e., in the INTER or INTER4V mode, interframe coding provides residuals between reference blocks and the macroblocks, see 3-1, 3-2, 3-3 of Figure 4, see column 5, lines 13-55); receiving an encoded bit stream including macroblocks identified as global motion vector coded and either copy type or residual type (see INTRA/INTER switch 3-1, 3-2, 3-3 of Figure 4, column 5, lines 13-55, and 30-1, 30-2 of Figure 6); deriving local motion vectors only for the global motion vector coded macroblocks and using the derived local motion vectors to identify reference blocks in the reference frame (see column 10, lines 14-39); copying the identified reference blocks for the copy type macroblocks (i.e., in the INTRA frame coding mode, identified reference blocks are copied into the macroblocks, see 3-1, 3-2, 3-3 of Figure 4, see column 5, lines 13-55); adding encoded residuals to the identified reference blocks for the residual type macroblocks (i.e., in the INTER or INTER4V mode, interframe coding provides the adding of encoded residuals between to the identified reference blocks, see 3-1, 3-2, 3-3 of

Figure 4, see column 5, lines 13-55); encoding and decoding some of the macroblocks in the current image frame using global motion vector coding where the global motion parameters are used to generate local motion vectors (see column 1, line 50 to column 2, line 12, column 10, lines 14-39), and encoding and decoding other macroblocks in the current image frame using another coding scheme (i.e., INTA and INTER frame coding schemes, see column 5, lines 13-55); generating subblock local motion vectors for individual subblocks in the same macroblocks using the global motion parameters, identifying individual reference subblocks in the reference frame pointed to by the subblock local motion vectors, and separately encoding and decoding the subblocks using the identified reference subblocks (see column 1, line 40 to column 2, line 12, column 3, lines 21-28, column 10, lines 14-39); a processor (see Figures 4 and 6, and column 10, lines 14-39) encoding an image frame by encoding a set of global motion estimation parameters for an image frame and identifying macroblocks in the image frame that have local motion estimation parameters derived during decoding from the global motion estimation parameters; wherein the global motion estimation parameters include global motion vectors associated with corners of the image frame (see column 1, line 50 to column 2, line 12, column 9, lines 50-63, column 10, lines 14-39, Figures 5 and 6); wherein the processor compares the global motion estimation parameters with block motion estimation parameters to determine which macroblocks use the local motion estimation parameters derived from the global motion estimation parameters (see column 10, lines 14-39); wherein the processor identifies macroblocks that are directly copied from reference blocks pointed to by the local motion estimation parameters derived from the global motion estimation parameters i.e., in the INTRA frame coding mode, macroblocks are directly copied from reference blocks, see 3-1, 3-2, 3-3 of Figure 4, see column 5, lines 13-55,

column 10, lines 14-39); wherein the processor encodes residuals for identified macroblocks (i.e., in the INTER or INTER4V mode, interframe coding provides residuals for identified macroblocks, see 3-1, 3-2, 3-3 of Figure 4, see column 5, lines 13-55) but no local motion estimation parameters (i.e., global motion estimation processing, see Figures 7 and 8, and column 11, lines 42-62); and wherein the macroblocks are N x N pixel arrays, where N is an integer, and the subblocks are M x M pixel arrays, where M is an integer less than or equal to N (see column 1, lines 40-49, column 5, lines 13-27).

4. Claims 10, 11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (6,256,343).

Suzuki discloses substantially the same method for coding or decoding an image, and encoder as above, but does not particularly disclose a decoder comprising a processor decoding encoded image frames by deriving local motion vectors for identified macroblocks, the local motion vectors derived from global motion estimation parameters associated with the image frames, the processor using the local motion vectors to identify reference blocks in a current reference frame and then using the reference blocks to reconstruct the macroblocks in a current frame, wherein the processor generates the local motion vectors by interpolating the global motion estimation parameters to locations of the macroblocks in the current frame, and wherein the processor uses the global motion estimation parameters to generate local motion vectors for different subblocks, the processor using the local motion vectors to identify different reference subblocks in the current reference frame and then using the identified reference subblocks to reconstruct the subblocks in the current frame as claimed in claims 10, 11, and 15. It is to be noted that it is considered obvious to produce a complementary decoder and all the decoder

specific functions to an already known encoder with the encoding specific functions. With this in mind, it is therefore considered obvious to provide the complementary decoder with the specific decoding functions such as decoding encoded image frames by deriving location motion vectors and the reconstruction of subblocks in the current frame as claimed in view of the already known encoder as shown in Figures 4 and 6 of Suzuki with specific encoding functions. Therefore, it would have been obvious to one of ordinary skill in the art, having the Suzuki reference in front of him/her and the general knowledge of encoders and decoders, would have had no difficulty having known the encoder as shown in Figures 4 and 6 of Suzuki to provide the complementary decoder with the specific decoding functions as claimed for the same well known decoding of video data for viewing purposes as claimed.

5. Claims 4, 12-14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki '343 as applied to claims 1, 2, 5-10, 15-18, 20, 21, and 23 in the above paragraphs (3) and (4), and further in view of Suzuki et al of record (6,205,178).

Suzuki discloses substantially the same method for coding or decoding an image, and encoder as above, but does not particularly disclose, though, the followings:

(a) generating codewords that identify the macroblocks that use the global motion parameters to generate associated local motion vectors; and generating codewords that identify the macroblocks that derive the local motion estimation parameters from the global motion estimation parameters as claimed in claims 4 and 19; and

(b) wherein the processor within a decoder detects code words included along with the encoded image frames that identify global motion vector coded macroblocks, wherein the code words indicate when the macroblocks are a direct copy of the reference blocks, and wherein the

code words indicate when residuals are added to the reference blocks to reconstruct the macroblocks as claimed in claims 12-14.

Regarding (a) and (b), Suzuki et al discloses a video =coder as shown in Figures 6, 7A, and 7B, and teaches the conventional use of codewords generated to identify macroblocks that derive the global motion parameter and local motion estimation parameter processings (see Figures 7A and 7B). In addition, since the codewords as generated from the encoder is already known, it is considered obvious that the complementary decoder as provided by one skilled in the art would certainly have the capability to detect the code words included along with the encoded image frames that identify global motion vector coded macroblocks, wherein the code words indicate when the macroblocks are a direct copy of the reference blocks, and wherein the code words indicate when residuals are added to the reference blocks to reconstruct the macroblocks as claimed. Therefore, it would have been obvious to one of ordinary skill in the art, having the Suzuki and Suzuki et al references in front of him/her and the general knowledge of codeword data within MPEG headers, would have had no difficulty in providing the codewords for identifying the macroblocks that derive the global motion parameter and the local motion estimation parameter processings as taught by Suzuki et al for the encoder of Figure 4 of Suzuki et al as well as the complementary decoder with the capability to detect the code words included along with the encoded image frames that identify global motion vector coded macroblocks, wherein the code words indicate when the macroblocks are a direct copy of the reference blocks, and wherein the code words indicate when residuals are added to the reference blocks to reconstruct the macroblocks in view of the already known encoder header data of

Suzuki et al for the same well known compliance to the MPEG encoding and decoding processing of macroblocks with the use of header data purposes as claimed.

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki '343 as applied to claims 1, 2, 5-9, 16-18, 20, 21, and 23 in the above paragraph (3), and further in view of Eleftheriadis et al (6,055,330).

Suzuki discloses substantially the same method for coding or decoding an image, and encoder as above, but does not particularly disclose wherein the processor performs run length coding on the encoded image frame as claimed in claim 22. However, such technical features are well known and made obvious by Eleftheriadis et al (see 252 of Figure 2, and column 7, lines 53-54). Therefore, taking the combined teaching of Suzuki and Eleftheriadis et al as a whole, it would have been obvious to provide the run length coder of Eleftheriadis et al after the quantizer 5 of Figure 4 of Suzuki for the same well known run length coding of quantized data in order to form an MPEG bitstream purposes as claimed.

7. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shimoda, Jeong et al, Hayashi, Shimizu et al, Lee, Ogawa, and Han et al disclose various types of video encoders.

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group customer service whose telephone number is (703) 306-0377.

RICHARD LEE
PRIMARY EXAMINER

Richard Lee/rl

3/12/04